TRUCK FARMING

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TRUCK FARMING.

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SAN FRANCISCO, CALIF.

NOTICE

Every farmer can obtain, free of charge, a copy of the following agricultural books:

Potash in Agriculture.
Principles of Profitable Farming.
Truck Farming.
Plant Food.
*Experiments with Fertilizers.
*Tropical Planting.
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Cotton Culture.
*Sugar Cane Culture.
Sugar Beet Culture.
*Fertilizing Sugar Cane.
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Value of Swamp Lands.
Strawberry Culture.
*Why the Fish Failed.
Orange Culture.

State which of the above-mentioned publications you desire, and it will be mailed to you free of charge.

*Furnished also in Spanish.

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PREFACE.

This pamphlet is an improved and revised edition of a Bulletin prepared by Prof. W F. Massey, and issued a few years ago, by the North Carolina State Experiment Station.

The original Bulletin contains an appendix entitled "The Mixing of Fertilizers for Trucking Crops" by Dr. H. B. Battle, Director of the Station. Some tables also formulas giving the composition of fertilizers are quoted from this appendix. Such quotations are indicated by asterisks (*).

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INTRODUCTION.

It is hardly necessary to say that the chief object of every truck farmer is to make money. But in truck farming, as in every other business, the most successful are usually those who have the most experience. There is, however, some difference between truck farming and general farming. Thus, in most cases, the truck farmer, who grows a great variety of garden crops, must show more knowledge, care and attention than does the general farmer, who raises only the staple crops.

Until recently the large truck farms were generally located near the big cities. This was done in order to insure a regular and ample supply of manure. The introduction of chemical fertilizers has changed the old conditions for truck farming. At present, manures more effective than stable manures may be purchased in a highly concentrated form; so that, in one load the farmer can have the plant food of ten loads of stable manure. As truck farming is more or less "intensive" the soil is made to produce as often and as much as possible. Hence, the absolute necessity of liberal soil feeding, and here is where chemical fertilizers come in to benefit the truck farmer.

SOME HINTS ABOUT TRUCKING.

A good soil is an important element in successful truck farming. The ideal truck soil is a mellow, sandy loam. Most soils may be adapted to trucking, if they are worked regularly and kept "in good heart"—that is, kept well fed. The most difficult soil to work is heavy clay. Such a soil should be frequently limed and thoroughly drained. In fact, sub-soiling is necessary on all heavy soils.

There is much advantage in having the land level, or nearly so, for cultivation is thus made more effective and there is less loss of fertility through drainage and surface washing during heavy rains. This danger of loss through drainage is one point to be considered in truck farming, as the fertilizers used should be quickly available for the growing crops.

The next thing is to select a location convenient to transportation facilities. It is not necessary to be very near to the large cities, where the prices of truck lands are sure to be high. If the truck farmer has good transportation service by rail or by water, he can compete on almost equal terms with his rivals near the large cities.

PREPARATION OF THE SOIL.

Rough cultivation, which answers very well for grain farming, will not do for truck farming. No matter how good the soil may be for general farming, it will not be in

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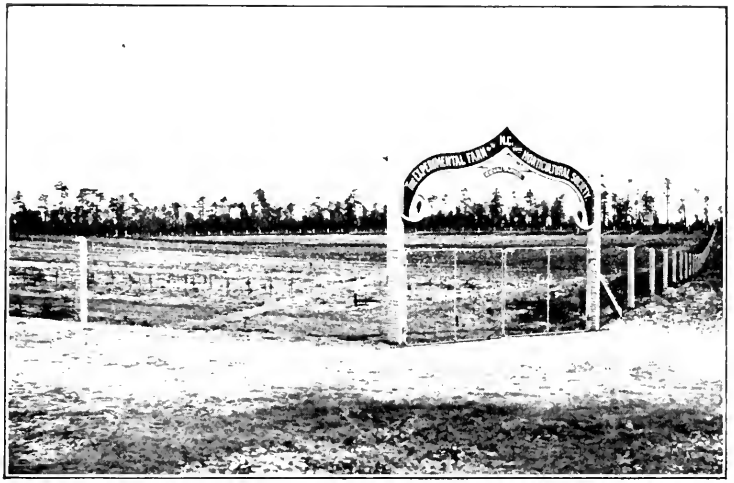
right condition to give the best results in garden vegetables until after several years of good culture and heavy fertilization.

It has been found that a light soil is helped by increasing its content of organic matter. This is done by growing a leguminous crop; for example, cow peas in the South, or clover or Canadian field peas in the North.

All leguminous crops (cow peas, crimson clover, peas, beans; all plants of the clover family), have the power of taking the nitrogen gas of the air and converting it into available forms of ammonia extremely valuable as a fertilizer. Thus, leguminous crops leave in their roots and stubble a very large quantity of ammonia, which becomes available for growing the crop, or crops, to follow.

It is very important to note, however, that legumes furnish only ammonia, and that in order to do this, they make very heavy demands on the soil for potash and phosphoric acid. In fact, without liberal supplies of potash and phosphoric acid, the crop will fail to store up any considerable amount of ammonia for the following crops. As, however, ammonia in fertilizer costs on the market more than twice as much as the commercial forms of potash and phosphoric acid, farmers can very well afford to feed the legume crops liberally with potash and phosphoric acid for the sake of the ammonia gained thereby.



ENTRANCE TO VEGETABLE DEPARTMENT. EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

GENERAL VIEW OF VEGETABLE DEPARTMENT.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

MANURES.

While it is true that for most vegetable crops the manure of the stable and barnyard may be used, few gardeners can profitably keep sufficient live stock to make all that they need. Furthermore, farmyard manure is less economical than the commercial fertilizers. Again, there are some crops that are actually better grown with commercial fertilizers than with stable manure. For example, the use of cattle manure on Irish potatoes is apt to induce the growth of the fungus causing "scab." Some truck farmers who are located near a large city may possibly be able to arrange for a supply of manure for the mere cost of hauling. Even under such conditions the advantage is very small. Such manures are rich in ammonia as compared with potash and phosphoric acid; and if these latter fertilizer ingredients are not added, the excess of ammonia must be largely lost.

In using the manures from the stable or barnyard, the truck gardener needs to pile them in heaps, and then reduce to a fine condition by slow fermentation. Coarse, fresh manure that can be used on a grass sod profitably will not do for the truck farm. It is by thorough decomposition that the mass gets into a state in which it will give up its plant food most readily. Piling and composting, while seldom profitable for the grain farmer, are of importance to the gardener. Those who are so situated as to be able to get the sweepings from the paved city streets can profitably use this material for composting with their

stable manure; the black mold from the forest can also be used to advantage. These materials should be put in thick layers with the manure in a broad and flat-topped pile, which should be chopped down perpendicularly, and thoroughly mixed by turning several times before using. The object is to keep up a slow fermentation and to check injurious heating, thus getting the pile into the condition of a black moist mold, suitable for using in the hill or broadcast, as the farmer may deem best.

CHEMICAL FERTILIZERS.

Chemical fertilizers (otherwise known as "Artificial fertilizers" or "Commercial fertilizers") are simply materials which contain ammonia, potash and phosphoric acid. "Complete fertilizers" contain all three of these principal plant food ingredients. Most of the materials, however, which go to make up a complete fertilizer contain in themselves but one or two of the necessary ingredients. Chemical fertilizers usually contain large amounts of plant food as compared with farmyard manures; and, very frequently these ingredients are much more quickly available than when they are in the form of farmyard manure. In this respect chemical fertilizers are especially valuable in truck farming.

There are innumerable mixtures of complete fertilizers offered for sale, and they contain varying proportions of the three chief ingredients. The value of these fertilizers, however, is stated by an analysis, which simply tells how

many pounds of ammonia, potash and phosphoric acid are contained in one hundred pounds of the fertilizer. For example, an average fertilizer for potatoes will have the following analysis:

Ammonia	6 per cent.
Available phosphoric acid	7 per cent.
Potash	8 per cent.

This simply means that 100 pounds of such a fertilizer contains 6 pounds of ammonia, 7 pounds of available phosphoric acid, and 8 pounds of potash. One hundred pounds of the best farmyard manure contains only about one-half pound ammonia, one-quarter pound of phosphoric acid, and about the same potash as ammonia.

It is now generally conceded that the necessary constituents needed by growing crops are three in number, as follows: ammonia (sometimes spoken of as nitrogen), phosphoric acid, and potash. All three of these are essential, as plants cannot grow without them. No one, or two of these, even if supplied in great excess, will answer the purpose. All plants must have all three ingredients.

The nature of the plant and the character of the soil in which it grows, determine the combination of fertilizer ingredients needed for a perfect growth to maturity.

NOTE. — This paragraph to close of chapter is taken from Appendix to Bul., 112, by Dr. H. B. Battle.

The following may be given as an example of how to obtain proper percentages of materials, the grade of ingre-

dients in percentages used being determined by reference to Table 4:

TABLE 5.

Ingredients taken.	Containing Ammonia. lbs.	Available Phos. Acid. lbs.	Potash lbs.
Cottonseed meal, 700 lbs.....	59.5	17.5	11.6
Nitrate of soda, 200 lbs.....	38.	....	....
Sulphate of potash, high grade, 300 lbs.....	....	....	156.
Acid phospate, 13 per cent., 800 lbs.....	....	104.	....
Total 2,000 lbs containing.	97.5	121.5	167.6
Divided by 20 to reduce to 100 lbs.....	4.87	6.07	8.38
Equivalent to percentages....	4.87	6.07	8.38

If the farmer desires to have the exact percentages of 5, 6, and 8 respectively, instead of 4.87, 6.07, and 8.38, as calculated, it can easily be done by reducing the amount of Sulphate of Potash and increasing the amount of Cottonseed Meal or Nitrate of Soda, whichever is desired. But, in practice, it is hardly necessary to reach the exact percentages suggested in the tables for different fertilizers, and an approximation as close as the above calculation is sufficient.

Another example may be chosen. Suppose a fertilizer is desired containing 3 per cent. of ammonia, 7 per cent. of

available phosphoric acid, and 7 per cent. of potash. It can be secured as follows:

Ingredients taken.	Containing Ammonia.	Available Phos. Acid.	Potash lbs.
	lbs.	lbs.	
Fish scrap, 400 lbs.....	40	12	....
Nitrate of soda, 100 lbs.....	19	....	....
Muriate of potash, 50 per cent., 320 lbs.....	....	....	160
Acid Phosphate, 11 per cent., 1,180 lbs.....	....	129.8	....
Total 2,000 lbs.....	59	141.8	160
Divided by 20 to reduce to 100 lbs.....	2.95	7.09	8.00
Equivalent to percentages....	2.95	7.09	8.00

MIXING THE INGREDIENTS.

As a general rule, complete fertilizers may be purchased of requisite analysis for all crops. If the farmer cannot obtain such mixture conveniently, it is a very simple matter for him to make the mixture. The ingredients should be free from lumps, and mixed until the mass is of a uniform color. An empty wagon-body will be found useful in which to mix a small quantity. After mixing, the fertilizer can be returned to the original bags, or, if desired, it can be used at once. It is well not to keep such mixtures stored for a long time, especially if Nitrate of Soda has been used as one of the ingredients. The Acid Phosphate has a tendency to cause some decomposition and loss of nitrogen. Nitrate of Soda easily absorbs moisture from the air, and on this account also it is not desirable to keep it in store.

PREPARING FERTILIZERS.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

SPECIAL FORMULAS SUGGESTED FOR TRUCKING CROPS.

No hard and fast rules for compounding fertilizers can be safely laid down. It is expected that changes will be made in any suggested proportions, which must always be governed by the character of the soil of any particular locality, or by any results secured from previous applications and experiences. Each trucker must be his own judge in such matters. Formulas suggested further on in this book are presented as being the best starting points for actual practice, to be amended or altered as further experience would dictate.

From the explanations previously given it should not be a difficult matter for anyone to calculate other combinations than those suggested in this book.

INDIRECT FERTILIZERS.

Certain materials are very useful in promoting the growth of crops, without being of themselves necessary as true plant food. Lime and gypsum are samples of such materials. They are sometimes called "indirect fertilizers."

Lime is one of the essential elements of plant food which must be in the soil to enable any plant to grow; but, for all the purposes of plant food many of our arable soils contain an almost inexhaustible supply. Lime has a value in the soil aside from its use by the plant as food direct. In a soil well stored with vegetable matter lime aids in turning the latter into available fertilizer. Lime also improves sour soils, and aids in breaking up insoluble fertilizer materials

of various kinds which exist naturally in the soil. It also has an important mechanical effect in the soil, making a clay soil more mellow, and a sandy one more compact. On lands cultivated in trucking crops and heavily fertilized, and with frequent green manure crops buried in them, an occasional liming has a very beneficial effect.

Gypsum, or land plaster, is chiefly lime, but in such condition that it has little value in breaking up organic matter. So far as use on the farm is concerned, it cannot be considered the same as lime, and cannot take its place. It is sometimes used to prevent the loss of ammonia from fermenting stable manure, but it is not so valuable for such use as Kainit. The action of plaster on any given soil can only be learned by trial. On very sandy soils it is seldom so beneficial in its action, as upon heavier, or clay soils. It is sometimes very effective in promoting the growth of clover or peas. There are many soils on which plaster seems to have no effect.

ROTATION OF CROPS.

While there are some crops, like onions and Lima beans, that seem to do as well or better by being grown continuously on the same land year after year, the systematic rotation of crops is, as a rule, as important in the garden as on the farm.

Different crops require the elements of plant food in varying proportions. Some require larger proportions of potash in comparison to the ammonia than others, and we can make our fertilization more economical by a rotation,

for the potash is not going to leave us as the nitrogen does, and we can take advantage of this to some extent in the crop which follows. Soils differ, too, in their capacity for retaining manures. Clay soils have a much greater power for absorbing and retaining plant food than sandy soils. This is due to the fact that clay rather retards the decomposition of manures, while in a sandy soil decomposition is more rapid. Unless a sandy soil is immediately underlaid by a retentive clay subsoil, its lower absorptive power will cause it to part more rapidly with the plant food by leaching. It will be found, therefore, to be much more important to keep up a rapid and regular rotation of crops on the sandy soils, which from their nature are best adapted to early vegetable crops, than on a clay soil.

Dr. A. Oemler, of Georgia, in his valuable book, "Truck Farming at the South," gives the following points on a rotation of crops:

"First: To have a crop which succeeds another as dissimilar in composition and the demand it makes upon the soil as possible.

"Second: Never to have plants of the same family succeed each other; for instance, melons should not follow cucumbers, tomatoes should not follow egg-plants or Irish potatoes; beans should not succeed peas, or vice-versa.

"Third: Tuberous plants should not be allowed to follow plants of the same character.

"Fourth: Root should not succeed to root crops, as turnips, beets, etc.

"Fifth: Deep or tap-rooted plants should not succeed others of similar growth.

"Sixth: To make the heaviest applications of manure to such crops as require most, as cabbages, onions, etc., and to have other crops succeed these requiring less, as tomatoes, egg-plants, etc., so that the whole farm may be gradually brought to the same degree of fertility."

As has been frequently noticed by practical gardeners, there is often as much need for a rotation of manures as of crops. A piece of land that has been continuously dressed with stable manure will be benefitted by a change to commercial fertilizers and vice-versa.

SEEDS.

The question of climate in its relation to the production of crops has been quite closely studied of late years, and no well informed gardener now supposes that all the seeds which he needs can be grown best in one climate. While the market gardener can seldom afford to grow his own seeds, there are some which he can generally produce to advantage, if unable to get them from a reliable grower in his own latitude and elevation, for elevation above the sea has the same effect on many crops as a high latitude.

DURATION OF VITALITY IN SEEDS.

Some seeds quickly lose their vitality, while some retain the power to germinate for a very long time. Lettuce seed are not usually ranked among those which retain their vitality many years, but when well kept they may be trusted

for several years. Beet seed will retain their germinating power for at least ten years under favorable conditions; cabbage, kale, radish, tomato, spinach, turnip, asparagus, broccoli, cauliflower, beans and peas, are all good for four years or more; while pumpkin, cucumber and melon seed will keep for ten years. Onion and leek seed are not to be relied upon after the second year, and their vitality is much weaker even in the second.

In all cases get seed from a seedsman of established reputation, and do not trust to seeds put out on commission at country stores.

TIME FOR SOWING.

All seed usually sown in the open ground vary in their requirements for growth. The vital principle in seed requires three conditions to induce germination, (1) moisture, (2) a proper degree of heat, and (3) access of the oxygen of the air. They all have a minimum temperature at which they will start into growth, some at a much lower point than others. Onions and English peas will germinate at a temperature but little above the freezing point, while the seeds of corn, cucumbers, and other tender plants will rot if exposed to moisture at such a temperature. It is evident then, that care must be exercised in sowing seeds at times when the temperature is suitable to the nature of the plant.

No market gardener should ever sow seeds by hand. There are now several effective garden seed-drills, and it is no longer necessary to sow seed by hand. The depth at which seeds are sown is governed by the character of the

soil, the time of the year, and the moisture present. In a general way, it may be said that the size of the seed should govern the depth of planting; but there are exceptions even to this, for the seed of the Lima bean (one of the largest seeds sown) should be barely stuck in the soil, eye down. The old rule is to cover the seed about three times its thickness with the fine mellow soil, but in many light soils this will hardly be sufficient for proper planting. Seeds need deeper covering in sandy than in heavy soils, and the soil over all seeds should be made as fine as possible.

QUANTITIES OF SEED PER ACRE.

The following figures, given by Mr. Peter Henderson, will be found useful as a guide, but few growers ever use such large quantities:

Beets, 5 to 6 lbs. per acre; snap beans, 2 bushels; cabbage, 1 ounce for 2,000 plants; cucumbers in hills, 2 to 3 lbs.; kale, 3 to 4 lbs.; watermelons, 4 to 5 lbs.; onions, 5 to 6 lbs.; onions, for sets, 30 lbs.; onion sets, 6 to 12 bushels; peas, 2 bushels; potatoes, 10 to 12 bushels; radishes, 8 to 10 lbs.; spinach, 10 to 12 lbs.; tomato, 1 ounce for 1,500 plants; turnips, 1 to 2 lbs.

COLD FRAMES AND HOT BEDS.

The small, narrow greenhouse has now almost superseded the hotbed of any kind for all purposes, the former being much more convenient and effective.

To construct a cold frame, use glass sashes made for the purpose, three feet wide by six feet long, in which the

glass is placed lapping, like the shingles on a roof. For these sashes the gardener constructs a frame of boards. The one at the back or North side is 12 to 14 inches wide, and the one in front 10 inches, so as to give a slope to the glass to carry off the water during a rain.

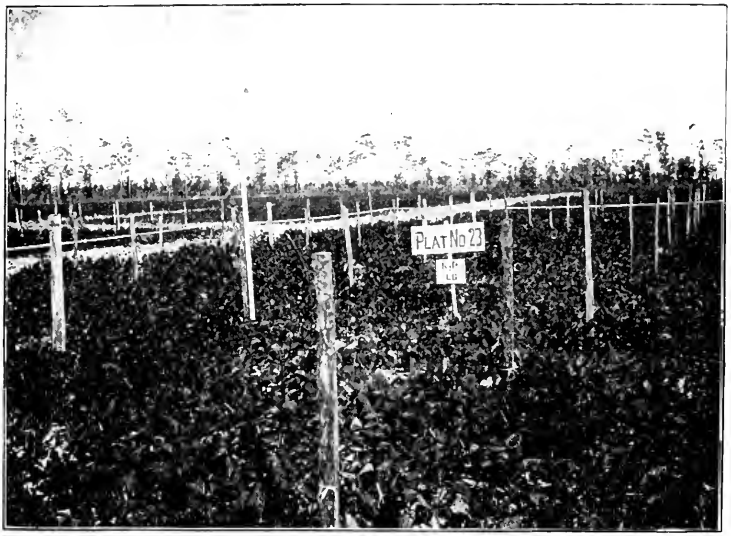
The frame should face South or South-east, and may be as long as desired, but, for convenience, it is best to put not more than 25 sashes in one frame. Some gardeners simply get the sides of the frame in line by nailing the boards to a line of posts, and use no cross-bars, but a frame so constructed, while convenient to spade up and prepare, is a very inconvenient one to manage. By far the best plan is to dove-tail a strip, three inches wide, into the front and rear boards every three feet of the length of the frame, but do not nail it fast. It can then be readily knocked out when preparing the soil in the frame. In the centre of this rafter a thin strip of the same thickness as the sash should be nailed, so as to form a slide for the sashes to slide up and down for airing the frame, it being of course understood that the sashes are laid across the frame the six-foot way. This will give a bed nearly six feet wide and as long as convenient.

The frame-yard should be in a well sheltered place, and if it is not naturally well sheltered, there should be a high board fence or some other protection. The object is to have not only a protection from cold, but also from high winds of any sort, for nothing is so provoking as to have a sash blown away in a windstorm.

WITHOUT FERTILIZER. WITH FERTILIZER.

Cow Peas.

Experiment Farm, Southern Pines, North Carolina.



COW PEAS FOR USE AS GREEN MANURE, FERTILIZED WITH PHOSPHORIC ACID AND POTASH.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

VARIETIES OF VEGETABLES AND THEIR CULTURE.

ASPARAGUS.

An asparagus garden is expected to last twenty years or more. The soil should therefore be prepared in a most thorough manner. A warm, sandy soil is the best, and one which has for some years been cultivated in garden crops and heavily manured is greatly to be preferred to a fresh soil, no matter how heavily the latter may be manured for this planting. But at no period of its growth should the asparagus crop be allowed to lack for manuring, for first class shoots can grow only in very rich soil. Furrows should be opened four feet apart, by going twice in a furrow with a turning plow, and then cleaning it out with shovels to a depth of eight inches at least, if the object is to grow white asparagus; but if green shoots are wanted, the roots should not be more than three or four inches under the surface. The plants should be set with their roots spread out in a natural position, and about a foot apart in the row. In setting the plants, be careful to cover the crown of the root not more than two inches at first, as the first shoots from the young roots are not strong enough to force through a deep mass of earth. Gradually fill the furrows as the shoots advance in growth.

Thorough, clean culture is essential at all times. As the plants get into blooming, much trouble will be saved by

digging out all the seed-bearing plants, as they tend to fill the soil with young plants. These are generally few in number, as the male plants are usually in a large majority. It is of no use to manure the garden in the fall, when the roots are dormant. All manuring should be done just before the plants begin to shoot. Stable manure is used by many growers as far as it can be had, and then supplemented with chemical fertilizers, and on alternate years half a ton of Kainit is applied. Some of the growers of the best asparagus in New Jersey rely entirely on commercial fertilizers, because they say stable manure does not produce a good clean quality of asparagus. If well cared for, the cutting may begin the third season.

CUTTING AND SHIPPING.

The roots should be cut well down to the crown of the plant, but care must be used to run the knife down close beside the shoot, so as to avoid injury to the other shoots. A machine is used for bunching, in which the shoots are placed with the tops all pressed evenly against a board, then clamped tight by a treadle, and tied. The butts are then evenly cut with a sharp knife. The bunches should be packed upright in crates just deep enough to allow a layer of moss under and over them.

CHEMICAL FERTILIZER.

The following formula, or analysis, is suggested:*

Ammonia	5 per cent.
Available phosphoric acid	6 per cent.
Potash	8 per cent.

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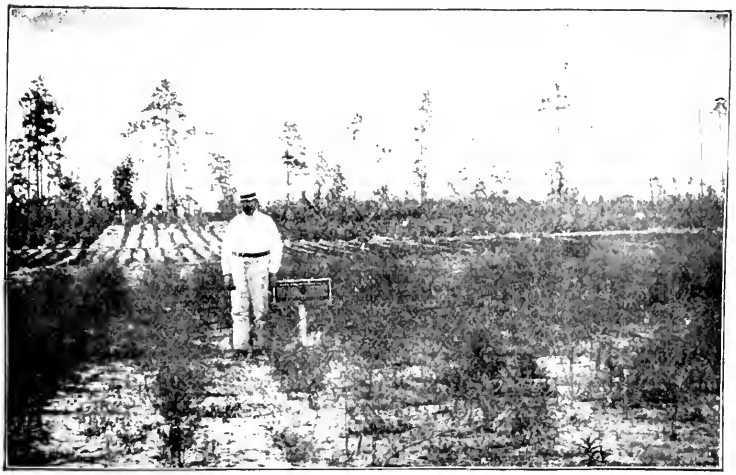
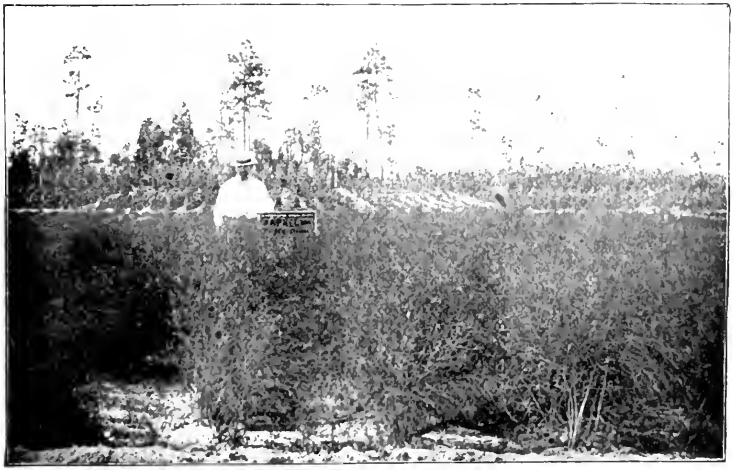


ASPARAGUS, NO FERTILIZER.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.



ASPARAGUS, FERTILIZED WITH POTASH, PHOSPHORIC ACID, AND NITROGEN. —EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA

If a complete fertilizer of the above composition is not readily obtainable, the following materials well mixed together will supply the necessary ingredients:¶

Nitrate of soda	200 lbs.
Cottonseed meal	700 lbs.
¶ Acid phosphate	800 lbs.
Muriate of potash	300 lbs.
	2,000 lbs.

At least 1,000 pounds per acre should be used. An application of the same amount per acre of a mixture containing:

Dried blood	300 lbs.
Bone meal	1,350 lbs.
Muriate of potash	350 lbs.

will answer the same purpose, as it supplies about the same amount of ammonia, potash, and available phosphoric acid.

BEANS (SNAPS). (Phaseolus Vulgaris.)

"Snaps" need the lightest and driest land of the farm, and the warmest exposure. They are more cheaply grown than any other garden crop, and occupy the land but a short time. The Snaps thus make a good crop to succeed the early cabbage crop, and when the crop is gathered, the vines can be plowed under to fertilize the land. When planted on land specially prepared for this crop, manure of some kind must be used in the furrow. Some gardeners

¶ Acid phosphate in these mixtures contains 14 per cent. available phosphoric acid. Bone meal contains about 10 per cent. available phosphoric acid.

consider fresh stable manure best, but this is seldom available, and we consider it a mistake to use it on a leguminous crop like the bean. Beans do not need heavy manuring, and a dressing of 500 pounds per acre of a high grade fertilizer well mixed in the furrow, will be sufficient. Two furrows should be lapped over the manured furrow, the ridge thus made rolled flat and the seed drilled on this flattened ridge. A skilled hand can sow the bean in a shallow furrow very well in the absence of a seed-drill, but drills of various kinds, both for hand and horse power, are essential to every well equipped truck farm.

SHIPPING.

The green beans should be shipped in well ventilated bushel crates. The pickers must be instructed to pick the pods as soon as they are of fair size and before they are old enough to show the bulge of the seed. They must use both hands so as not to disturb the roots of the plants. The packing in the crates must be done with care, as beans shrink in transit and the crates should be full on arrival. A light sprinkling before packing will help in this matter, and the packing should be regular and firm and not a promiscuous tumbling into the crate.

VARIETIES.

For earliest planting, the "Mohawk" is still popular on account of its hardiness, but it is soon superseded by those of better quality. Of the green-podded sorts, many con-

sider the "Extra Early Valentine" the best. It is very ear and productive, and free, to a great extent, from the dus that attacks the wax-podded sorts. Of the wax or yellow podded sorts, we have as yet found none that have as gooc qualities as the "Gold-Eye" wax bean. It is not so handsome a pod as the old "Golden Wax," but as it is usually free from the rust which has driven that fine variety out of use, it is a safer bean to use.

GENERAL TREATMENT.

The culture of snap beans is so simple and so soon over, that it is not necessary to go into detail. It is only necessary to have the proper distance between the rows for the use of a horse cultivator. When the crop is gathered, the vines should be at once plowed under.

CHEMICAL FERTILIZER.

The following formula for the bean crop is suggested:*

Ammonia	3 per cent.
Available phosphoric acid	7 per cent.
Potash	7 per cent.

A mixture of the following fertilizer materials will give the above analysis:*

Nitrate of soda	100 lbs.
Cottonseed meal	450 lbs.
Acid phosphate	1,200 lbs.
Muriate of potash	250 lbs.
	2,000 lbs.

For beans about 500 lbs. per acre of the above mixture is recommended. The same amount of plant food can be

furnished by using 445 lbs. of the following mixture per acre:

Bone meal	1,700 lbs.
Muriate of potash	300 lbs.
	2,000 lbs

TREATMENT FOR DISEASE.

For Anthracnose, pod rust; spray with Bordeaux mixture when the first leaves have expanded. Repeat at such intervals as to keep the new growth always covered with mixture.

LIMA BEANS.

The adaptability of varieties to sections must be considered. In the South the large pole Lima bean does not do well. It is better to use a bush Lima, such as Henderson's, which is treated much the same way as described for snap beans. In Northern sections the pole beans are far more productive. The fertilizer in both cases is the same as for snap beans, but it must be remembered that the growth of the large pole Lima beans is many times that of the bush Lima, or of the snap beans, and the fertilizer must be applied accordingly.

BEETS.

The beet, on account of its long tap root, requires a mellow, deeply worked soil, and one in which the fertilizing elements are very uniformly distributed. Coarse, lumpy

manure makes ill-shaped roots, and it should never be used. Soil that has for years been well manured and cultivated in vegetables is the best for the beet crop. A good crop can seldom be made on land freshly turned over to vegetable culture, no matter how well manured. While quite a hardy plant, beets are easily destroyed by a freeze, when just germinating. Half a ton to a full ton of high grade fertilizer is needed for the best results, according to the previous manuring of the land. The rows should be wide enough to admit of horse culture. Furrows are marked with a plow and in them the fertilizer is scattered and covered with furrows from each side. The ridge thus made is flattened with a roller, and the seed drilled with a garden-drill on these flattened ridges. Frequent cultivation is needed and the rows must be kept clean by hand weeding. One bar plowing and two cultivations with one hand-hoeing will usually make the crop. About four pounds will sow an acre.

SHIPPING.

Early beets are shipped before they are fully grown, and while yet tender. As soon as they measure about three inches in diameter, they are ready to ship. Pull them and trim the leaves to about three or four inches from the roots, and pack neatly and closely in ventilated barrels, and cover the top of the barrel with bagging. They will command a better price if tied in flat bunches by their tops, three or four in a bunch, before packing in the barrels.

VARIETIES.

For family use we know of no better early beet than the old "Bassano," but its big top and light color condemn it for the market grower. For many years the "Extra Early Egyptian" beet has been the standard sort with the market gardeners, because of its earliness, small top, and dark crimson color, and it is still largely grown. But it is a beet of very poor quality, and soon gets hard and stringy. The "Eclipse" beet has of late years rapidly attained popularity, and is superseding the "Egyptian," being a handsome, globular beet of good color and quality. "Lentz Extra Early Blood Turnip" beet has also become popular with gardeners by reason of its size, good quality and small top.

CHEMICAL FERTILIZER.

The same fertilizer is suggested for beets as is given for lettuce.

TREATMENT FOR DISEASE.

For Leaf Spot: Spray with Bordeaux mixture when 4 to 6 leaves have developed. Repeat in 10 days, and two weeks later.

EARLY CABBAGE.

Make up beds for the seed, sowing about four or five feet wide and sow the seed in rows across the beds about a foot apart. The seed should be sown thinly so as to give room for stocky growth. The beds can be thrown up with a plow about a week ahead, and let lie for the weed seed

to germinate, and in raking them level these weeds will be destroyed and thus give less trouble thereafter. Those sown in the frames are usually scattered broadcast and transplanted as soon as large enough to handle, about two inches apart all over the bed. This will give much better plants than if they were left as sown. If not transplanted, the seed should be sown in rows also in the frames, but the rows need be but three inches apart. There are so many accidents of weather and insects to guard against that the careful gardener will always use a superabundance of seed in preparing for this crop.

THE SOIL AND ITS PREPARATION.

Again it should be said that the soil for early cabbages cannot be too rich. The plants are gross feeders, particularly of nitrogenous manures, and a continuous and rapid growth is essential to earliness and a good crop.

Good early cabbages are seldom grown on black bottom lands. These lands are bad for wintering the plants, and make soft-headed cabbage. But it should be remembered that no matter how fertile you may have your uplands, it will never do to assume that you can grow a good crop of early cabbage without further heavy dressings.

We have never yet been able to discover the limit to which manuring may be profitably carried with this crop. The use of lime as the soil gets well supplied with vegetable matter is an important matter in the cultivation of the cabbage crop. It should be applied about once in five

years, at the rate of fifty bushels per acre. If the soil has a clay bottom it should be deeply broken by the sub-soil plow whenever the land comes in cabbage.

TRANSPLANTING.

In drawing the plants from the seed-bed, they should be placed at once in tubs containing enough water to cover the roots, in which they should be taken to the field, and set while dripping wet. We prefer to run the rows East and West, and to put most of the fertilizer in the laying-off furrows and bed on them. Then set the plants near the base of the bed on the South side. The plants should be set so firmly in the soil that the tip of a leaf will break off before the plant can be pulled out by taking hold of the edge of the leaf, and they should be set well in the ground so as to cover the entire stem, which is the most tender part. The beds should be from two and a half to three feet apart, and the plants about fifteen inches apart in the row.

CULTIVATION.

Few plants require more rapid and thorough culture than the cabbage. As soon as growth begins the rows should be barred off with a small plow and the soil at once levelled with the cultivator. The cultivator should then be used once or twice and the cultivation completed with the plow by bedding the soil back to the plants. At the "laying-by" cultivation great benefit has been derived from running a plow without mould-board deeply through the

centre of the middles. A light sub-soil plow or common bull-tongue will answer.

HARVESTING AND SHIPPING.

A light, sharp hatchet is the best tool for cutting cabbages. The shipping should begin as soon as the hearts of the cabbages are firm and solid. A few of the outer leaves should be left on, so as to make them pack nicely in the barrels. Ventilated barrels are generally preferred for shipping, but large crates holding a barrel are coming more and more into use for cabbages and a few other crops. Some growers think that a small-headed "Jersey Wakefield," that will take nearly seventy-five heads to the barrel, makes a more profitable shipping cabbage than the larger "Charleston Wakefield," that will fill a barrel with fifty heads. The "Succession" and "Fottler's Brunswick" will fill a barrel with eighteen or twenty heads.

The packing should be done as firmly as possible, so that there should be no material shrinking in transit. Put heads of same average size in each barrel, cover with bagging and mark the number of heads in each.

VARIETIES

The earliest cabbages are invariably of the conical-headed class. The introduction of the "Jersey Wakefield" marked an era in early cabbage culture in this country, and soon caused the old "Early York" to be abandoned by all progressive truckers. The great fault of the Wakefield has been a lack of uniformity of type. After years of careful

selection we now have various strains of "Wakefield" and other conical-headed sorts, uniform in type, and far more valuable than the original "Wakefield." The largest heading of these is the one known as the "Charleston." This is of good size, but it is later than the small type.

Of the smaller type of conical-headed cabbages there are two that have become favorites in the South. These are "Tait's Extra Early" and "Tait's Extra Early Pilot." The "Winningstadt" was long a favorite, but it has the disadvantage of making such widespreading leaves, that fewer can be grown on an acre. But it is later than the two sorts last named, which we consider the ideal early cabbages.

Of the flat-headed second early type there is little choice between "Fottler's Improved Brunswick" and "Succession." Both are fine and very sure to head.

LATE CABBAGE.

The plants should be planted in a naturally moist clayey soil, made as rich as possible. Cultivation should be rapid and thorough, and every means should be used to keep the plants growing as fast as possible. As it is important that they should begin to turn in for heading early in November, a dressing of Nitrate of Soda alongside the rows will be useful. Then early in December they will be well headed. If they are then bent down where they grew, with the heads turned towards the north, and the soil is well banked over the stalk and the base of the head, they will keep well.

For this crop we prefer to use "Fottler's Brunswick" and "Premium Flat Dutch." The first named will head earlier, and the last will keep longer. Constant care will be needed with this crop to keep insects in check.

For the common "green worm," the larva of the cabbage Plusia and Pieris butterflies, a mixture of salt and air slaked lime in equal parts should be sprinkled over the plants. If a dressing of Nitrate of Soda is applied alongside the rows in cultivating, the growth will be so much encouraged that the plants will, in a measure, outstrip the worm. The harlequin or terrapin bug can be destroyed by kerosene emulsion in almost full strength, but it is a severe dose for the plants, and handpicking is best on a small scale.

CHEMICAL FERTILIZER.

For both early and late cabbage, an application of about 1,500 pounds per acre of the following fertilizer is recommended:*

Ammonia	6 per cent.
Available phosphoric acid	5 per cent.
Potash	7 per cent.

An equivalent fertilizer may be made of a mixture as follows:*

Nitrate of soda	300 lbs.
Cottonseed meal	750 lbs.
Acid phosphate	700 lbs.
Muriate of potash	250 lbs.
	2,000 lbs.

or:

Tankage (9 per cent.)	900 lbs.
Bone meal	800 lbs.
Muriate of potash	300 lbs.
	2,000 lbs.

CAULIFLOWER AND LETTUCE.

In the Southern sections the seed should be sown not later than the 15th of September. Early in November they should be set in the frames, six plants to each 3 x 6-foot sash, and the rest of the space in the frame set with "Tennis Ball" lettuce six inches apart, from seed sown a week earlier than the cauliflower. The soil in the frames should be of the richest possible description. The glass should be put over the plants at once and shaded with bagging until the plants recover from the transplanting. Then the shade must be removed and the plants exposed in all sunny and warm weather, but the sashes should always be drawn over them on frosty nights. The object is to keep all the plants in a state of healthy growth, but not to keep so close that a very tender growth will be made, as they may be seriously injured then by a sudden cold snap.

The lettuce should be well headed and ready to ship by Christmas. Lettuce should be shipped in tight barrels and covered with heavy bagging. Trim off all defective leaves and rinse each head in water in packing. Pack neatly in layers in the barrel, heads upside down and well tucked in, so as to give no room for jostling.

After the lettuce is out of the way give the cauliflowers a good working over, and then expose them to the full air on every favorable opportunity. The object is to get them well hardened to the outer air by the time they begin to get their leaves against the glass.

Finally, by the latter part of February, strip the glass

entirely off of them, and use it on other frames for tomatoes, cucumbers or other crops. They require a very rich soil, and an abundance of water. The plants in the frames should, therefore, never be allowed to suffer for water, and the glass should be stripped off in every warm rain during the winter. If snow falls, let it lie on the glass, as it will protect the plants from the cold which is apt to follow the clearing off.

VARIETIES.

The varieties of cauliflower for growing in frames are the "Early Erfurt" and the "Snowball." The last named is the best For growing in frames with the cauliflower we have found no lettuce better than the strain of Tennis Ball known as the "Boston Market Lettuce." When the frames are devoted to lettuce alone, the sort called the "Big Boston" is probably the best. The "Black-Seeded Simpson" is a quick-growing sort of fine quality, but it does not make a close head, and hence does not sell so well. The lettuce known as "All the Year Round" is one of the best for open-ground culture, and for spring planting the "Hanson" is fine, as it stands warm weather well.

CHEMICAL FERTILIZER.

For cauliflower, the same fertilizer as recommended for cabbage is used. For lettuce, we suggest the following:*

Ammonia	6 per cent.
Available phosphoric acid	5 per cent.
Potash	7 per cent

A mixture of the following materials will give the above analysis:*

Nitrate of soda	300 lbs.
Cottonseed meal	750 lbs.
Acid phosphate	700 lbs.
Muriate of potash	250 lbs.
	2,000 lbs.

or:

Tankage (9 per cent.)	975 lbs.
Bone meal	700 lbs.
Muriate of potash	325 lbs.
	2,000 lbs.

TREATMENT OF CAULIFLOWER FOR DISEASE AND INSECTS.

Cabbage worm: Kerosene emulsion, or Paris green if plants are not forming head. Root Maggot: Carbon Bisulphide injected in the soil near base of plant. Club Root: Rotation of crops. Do not grow cabbage, turnips, etc., in succession.

CELERY.

Prepare a bed of moist soil, as mellow in character as can be had. Use large quantities of manure and make it as fine as possible by chopping, rolling and raking. Then mark out shallow rows across the bed and scatter the seed thinly. Cover only so much as may be done by beating the bed over with the back of a spade. As soon as the bed has been sown and packed over with the spade, cover it with jute bagging or old gunny sacks. These, spread on the soil, will keep the surface moist and enable the seed to

germinate freely. Care must be taken to lift the cover as soon as the seeds begin to germinate, and gradually inure them to the light by propping the bagging up on sticks to shelter them from the rays of the sun. A little shade will be a great help in carrying them through the summer. Screens made of building laths nailed an inch apart and placed on posts high enough to work under, make an admirable shelter for the beds.

TRANSPLANTING.

As soon as the plants are an inch or two high they should be transplanted into another bed about two inches apart each way. This will make them grow stocky and form a mass of roots that will enable them to stand the final transplanting better. Fresh manure is apt to be harmful, but commercial fertilizers high in potash may be added profitably. As celery grows rankly, the tops should be sheared once or twice before the final transplanting. The final transplanting and growing of celery is the point in which the greatest difference comes between Northern and Southern culture. In Northern sections the growers are obliged to lift their crop in the fall and store in pits and cellars. They accordingly grow their celery in single rows three to four feet apart, so that horse labor can be used when it is grown on a large scale. In the South it is not necessary to lift the crop. The great difficulty in the South in some winters is to keep it from growing all winter and running to seed.

CULTIVATION AND AFTER-TREATMENT

After the planting of celery the only thing necessary for some time is to keep the beds well cultivated and free from weeds.

Celery is a plant which is native to marshes and wet lands, and never reaches its best development in hard-baking, upland red clay, though fair crops can be grown in moist seasons. When a choice of locations can be had, celery should always be planted in low lands, where it is practicable to irrigate it in dry weather. When a proper location is found, it is best to keep the celery patch in the same place year after year, only giving attention to the fact that it must be heavily fertilized every year, no matter how rich it may seem. In cultivating celery, it is at all times important that the plants should never be handled while wet with dew or rain, as such handling will cause the leaves to rust and turn yellow. As the celery grows, the outer leaves usually have a tendency to spread flat out upon the ground. To counteract this, it will be found necessary to put it through what is called "the handling process." This is done by putting just enough earth around the celery plants to hold the leaves upright.

The first handling, to put the celery in an upright position, should be made in October. Provide two twine strings, twelve to fifteen feet long, with a pointed peg tied to each end. Stick a peg opposite the end of a row and about a foot away. Then take one turn of the twine around each plant in the row, so as to draw the leaves into an up-

right position, and finally fix the other peg into the soil opposite the other end. With the second cord and pegs treat the next row in the same way. Now shovel the fine earth from the vacant spaces on each side of the bed between the rows, and then pack it tightly by hand against the plants. Use earth enough, and no more, to hold them firmly in an upright position. Now untwine the strings and use them in the same manner on two more rows, and so proceed until all the bed is handled up. Be sure to do this when the celery is dry, as before suggested.

In the subsequent earthing, if the celery has outgrown its upright position, it may be necessary at first to use the strings again, but if the spaces between the beds are kept finely cultivated, it is usually sufficient to hold the plant in the hand while an assistant shovels fine earth around it. It is important that the earth should be kept out of the heart of the plant. When the final earthing up for bleaching is begun, care must be used to build up the outside of the bed at least six inches wider than the rows are long, so that the five-foot bed will be enclosed in a bank of earth fully six feet wide. Keep adding earth as the tops elongate, and finally, about Christmas, cover entirely over with earth, and cover with straw or forest leaves to keep frost out.

VARIETIES.

Numerous varieties are named in seedsmen's catalogues, but it is well to bear in mind that the dwarf celeries so popular at the North are not so well adapted to the South-

ern climate. "Golden Heart" is one of the best, and the "Giant Paschal" is said to give excellent results. A good strain of the old "Giant White Solid" is hard to beat. "Henderson's White Plume" is liked by some, though it does not do so well in Southern States. "Sandringham" is a fine sort, intermediate between the dwarf celery and the giant.

Celery for shipping is tied in bunches of four or five stalks, packed in crates with damp moss.

CHEMICAL FERTILIZER.*

The following analysis is suggested:

Ammonia	7 per cent.
Available phosphoric acid	5 per cent.
Potash	8 per cent

This fertilizer may be made on the farm by intimately mixing together:*

Nitrate of soda	300 lbs
Fish scrap	800 lbs.
Acid phosphate	600 lbs.
Muriate of potash	300 lbs.
	2,000 lbs.

or:

Tankage (9 per cent.)	675 lbs.
Dried blood	400 lbs.
Bone meal	600 lbs.
Muriate of potash	325 lbs.
	2,000 lbs.

TREATMENT FOR DISEASE.

For Leaf Blight, or Rust: Spray with ammoniacle copper carbonate upon first indication of the disease. Repeat as often as is necessary to protect the foliage.

CUCUMBERS.

In preparation for forwarding the plants in pots, a full supply of compost for filling the pots must be prepared the previous fall by cutting grass sods and getting black mold from the forest, and piling them in layers with well rotted manure, putting about two-thirds sods and leaf mold and one-third manure. This must be turned and well mixed several times during the winter, and before using should be passed through a gravel screen to make it uniform and to remove all lumps and rough material. The pots are filled with this compost and set closely and perfectly level in the frames. The seeds are scattered in each pot, and more compost is sifted over them to cover the seed. They are then well watered with a sprinkling watering-pot until the entire soil in the pots is wet through, and the sashes are put on and kept close until the seeds germinate. Great care must be taken to exclude mice from the frames, and careful attention must be given to watering.

PLANTING.

The plants in the pots should first be well watered, and then knocked out of the pots without breaking the ball of soil, and carried to the field in flat boxes. The plants are set in holes made in the compost in the hills and the earth is packed closely around the ball, and the whole is covered a little deepr than it grew in the pot. The subsequent culture is just the same as if seed had been planted in the hills.

In raising the crop from seed in the open ground, the only difference is to plant the seed in the hills a little earlier than it would be safe to set out the pot plants. Cultivation must be rapid, as the vines will soon stop it. The crop is laid by by bedding up to the plants with a plow. The same treatment will answer for muskmelons. The hills should be made with a shovelful or two of compost of manure and black mold from the woods and a handful of high grade fertilizer sprinkled over it and covered with soil upon planting the seeds.

VARIETIES.

The catalogues give long lists of cucumbers, but the truckers adhere mainly to the "White Spine." A good strain of this variety is all that need be desired.

CHEMICAL FERTILIZER.

Use the same fertilizer as suggested for cabbage.

EGG PLANT.

The egg plant is a tender, tropical plant, belonging to the same natural order as the tomato and the potato. The best way to secure an early crop is to sow the seed early in a greenhouse or hot-bed, and the plant must be kept steadily growing in a good uniform temperature until the weather is permanently warm outside. Any check in its growth will result in stunted plants and a worthless crop.

The seed of egg plant should be sown in shallow boxes of rich compost in a greenhouse where a night temperature of fully 65 degrees is maintained. As soon as up, and

even before the second pair of leaves are developed, they should be carefully lifted and transplanted into other boxes of fresh soil about an inch or more apart, and set a little deeper. If left standing thickly where they germinated, the "damping-off fungus" will often destroy the whole in a single night. When the rough leaves are well developed, the plants are again transplanted into three-inch pots and set on the greenhouse benches. Later on they are shifted into four-inch pots in the same house.

They become marketable as soon as they attain the size of a small "Jenny Lind" cantaloupe, or from one to three pounds weight. The fruit should never be pulled, but carefully cut with a sharp knife and packed in well-ventilated barrels, or barrel crates. It is an expensive crop to forward, but the profit depends on the earliness of the product, which will pay well for the extra expense.

The soil for egg plants should be light and warm, and as rich as it can be made. Low, wet and cold land will not make egg plants. The crop will be in exact proportion to the rapidity of their growth. Land that has been the previous year in the early Irish potato crop, and heavily fertilized, will be suitable for them, provided that when the potatoes are off the land, it is at once sown in peas, which should be allowed to die on the land, and crimson clover seed sown among them in September. The clover and dead pea vines should be deeply plowed under in April and the surface put in good order for the egg plants.

The Colorado potato bug is very fond of the egg plant,

but in the early stages of its growth this pest can be easily kept under by spraying with Paris green mixed with water. Later on, as the fruit forms, hand picking must be resorted to. Much work can be saved by examining the under side of the broad leaves for the orange colored patches of the eggs of the insect, and crushing them with finger and thumb. The plants are also subject to the "Southern Blight," which is so destructive to the tomato at times. This disease shows itself by the sudden wilting and death of the plants just as they are coming into fruit. A spraying with Bordeaux mixture should be effective against it.

There are several varieties of egg plants, but only two of them are commonly grown. These are "The New York Improved" and the "Black Pekin." The last named is early, but not prolific, and the fruit is smaller than the first, which is really the only sort worth growing. Even this rapidly deteriorates from careless saving of the seed. The best strain of these seed is said to be that largely grown among the Norfolk gardeners as "Tait's Improved New York Purple."

CHEMICAL FERTILIZER.

The recommended analysis is:*

Ammonia	5 per cent.
Available phosphoric acid	6 per cent.
Potash	7 per cent.

An equivalent fertilizer may be had by intimately mixing:*

Nitrate of soda	200 lbs.
Cottonseed meal	700 lbs.

Acid phosphate	840 lbs.
Muriate of potash	260 lbs.
	2,000 lbs.

or,

Tankage (9 per cent.)	625 lbs.
Bone meal	1,100 lbs.
Muriate of potash	275 lbs.
	2,000 lbs.

KALE.

The "Dwarf Green Curled Scotch Kale" is one of the leading winter crops of truckers, but the price is apt to fall to a figure that allows of only cheap transportation by water.

The crop is sown during August and about eight pounds of seed used per acre, so as to allow for some being eaten by the flea beetle, which is as fond of them as of cabbage. Use the fertilizer given for spinach.

MUSKMELONS.

The chapter on cucumbers will apply equally well to this crop, and it is not necessary to repeat it here. The varieties in the catalogues are very numerous, and new names are added annually, but the truckers still adhere mainly to the older sorts. The main variety grown in Southern States is the "Jenny Lind." This is a small, green-fleshed, netted melon, well known and popular, and is about the earliest of any. In high quality the "Emerald Gem," a green-skinned sort, with orange-colored flesh, in our opinion stands at the head of all melons. It is, however, much later than the Jenny Lind, and is apt to crack badly in wet

weather, and has not become so popular with growers, but for home use it is unsurpassed. The "Hackensack" and the "Anne Arundel" or "Acme" are grown to some extent for market, but more northward than in the South. Use same fertilizer suggested for cabbage.

WATERMELONS.

The watermelon crop has of late years attained great importance, but not so much among the market gardeners proper, as among growers on warm, thin, sandy soil that are well adapted to this crop.

The best soil for the watermelon is a high, warm, sandy soil, though good but later crops can be grown on mellow bottom lands. Land that has been newly cleared, or an old field that has been lying out for some years, is usually a favorable place for the melons.

The usual method of planting, after the land has been well prepared, is to lay it off with the plow in checks ten to twelve feet each way and plant at each intersection. The furrows are enlarged at the crossings so as to make a wide hole in which the compost is placed. The compost,—made of well-rotted manure and leaf mold from the woods, should be prepared during the previous winter. Two or more shovelfuls should be placed in each hill, and a good handful of a high-grade fertilizer should be well mixed with the surface of the hill before planting and lightly covered with soil. On the flattened surface of the hill made over the manure the seed is planted.

When a stand is secured and the plants are strong, they should be thinned to two plants in each hill and the soil well loosened around those that are left. The cultivation should be rapid, before the vines get to running, by throwing furrows to the plants with a light plow. The vines should never on any account be disturbed or moved, and all cultivation must be in advance of their extension.

VARIETIES.

The varieties of watermelons are very numerous, but for shipping a melon should be tough enough in its rind to stand the handling to which they are subjected. No variety yet grown has become so popular among market growers as the "Kolb's Gem." This is a round melon, of medium size, with a thin but tough rind and handsome, bright-red flesh. It is, however, not of fine quality or flavor, but its carrying quality and pleasing appearance make it the most profitable sort grown. The "Jones" melon, a recent introduction, is similar in shape to the Gem, of larger size and far better quality, but the brittle nature of its rind will forbid its use by shippers. The "McIver Sugar" is one of the best watermelons in cultivation. It is an oval-shaped melon, striped light and dark green, and is the most uniform and true to type of any melon except the Kolb.

The same blight that attacks the tomato and egg plant attacks the watermelon, and it may be that spraying with Bordeaux mixture will prevent it, but this cannot be stated definitely. Use the fertilizer suggested for cabbage.

ONIONS.

Onions, like sweet potatoes, can be grown year after year on the same ground, provided the land is kept heavily fertilized. A loam more inclined to sand than clay is best, and the best crops cannot be had until the land has been cultivated in the crop and well manured for several years. The plants will not thrive among weeds and grass.

First as to the fall planting of sets for the green onion crop common among Southern truckers. The soil should be in the finest possible order, and furrows run as closely as will admit of one-horse culture. In these furrows the fertilizer is scattered,—a high-grade article, at the rate of not less than 1,000 pounds per acre.

The bedding is important, as it puts the fertilizer just where wanted and the slight elevation above the general surface is a protection from winter rains. It also enables the grower to cultivate more readily with horse power among the small plants. The planting should be done in October, and little need be done, except to keep the plants clean, till cold weather sets in, and to cultivate well as soon as growth fairly begins in February. This crop should be ready to ship in March, tied in bunches of five or more, and packed in barrels, with most of the tops left on. As soon as they are off, the land can be put in order for the crop of snaps, which can be followed by peas, to be cut for hay, and prepare the soil for the next fall crop of onions. Grown in this way, the manure applied to the onions will carry the other crops, and the soil will be accumulating humus from

the bean vines and the pea stubble, and there being no stable manure used, the weeds will become fewer year by year.

THE CROP FROM SEEDS.

There are two methods of growing onions from the seed the same season. One is to sow the seed in frames in January and transplant the young plants later on. The other is to sow the seed where the plants are to grow. Some varieties of onions will make a much heavier crop by being sown under glass and transplanted, while with other sorts it is of no particular advantage, except in earliness. The sorts mainly benefited by this practice are the Italian and Spanish varieties. Though apparently a laborious method, it is little more trouble than the thinning of the crop grown in the open air. The variety best adapted to this method of culture is the large pale yellow sort known as the "Prize-Taker." The seed are sown quite thickly in the frames, and when well hardened are dibbled in rows marked on heavily-manured and flattened ridges, as heretofore advised for other plants.

The mature crop of onions in the South should be shipped as soon as ripe, so as to get into the market before the Northern crop does, and thereby command a better price.

VARIETIES.

The varieties of onions are very numerous. The earlieest are the Italian sorts and the Spanish onions usually grown in Bermuda, and sold as the Bermuda onion. The earliest

onion of fair size is the "Queen." Tait's Extra Early Queen we have found to be a fine strain, very early and of fair size. The Prize-Taker is a very large globular yellow onion that has become quite popular of late. It is the best of all for starting under glass and transplanting. It will not keep when grown South. "Giant Rocca" is a very large late onion of a reddish brown color. The "Southport White Globe" is excellent. The Queen will be found best for the fall crop from sets or for the earliest crop from spring-grown seeds. The Potato onion or Multiplier is always grown from fall-planted sets, as it does not make seeds. There are two varieties, the white and the yellow. The white sort is now much planted for early green bunching onions and both are used for an early ripe onion.

GROWING ONION SETS.

For growing sets the soil must not be so rich as for growing the onion crop and the sowing should not be so early, the object being to get as small well matured sets as possible. The seed is sown in drills in light, mellow soil and very thickly, not less than twenty pounds of seed per acre. As soon as ripe they are taken up and cured with the tops adhering to them and kept with the tops attached till selling or planting time. Sets of the Queen must be planted in the fall, as they will not keep for spring planting. Seed for growing sets in Southern sections should not be grown North of Philadelphia.

CHEMICAL FERTILIZER.

The following fertilizer analysis is suggested: *

Ammonia	5 per cent.
Available phosphoric acid	5 per cent.
Potash	8 per cent.

If such fertilizer cannot be conveniently purchased in the market, a mixture of the following materials will answer the same purpose: *

Nitrate of soda	200 lbs.
Cottonseed meal	750 lbs.
Acid phosphate	750 lbs.
Muriate of potash	250 lbs.
	2,000 lbs.

or:

Tankage (9 per cent.)	825 lbs.
Bone meal	850 lbs.
Muriate of potash	325 lbs.
	2,000 lbs.

PEAS.

The soil for peas should be light and warm. Land that has been well manured for a crop the previous year will need little fertilizer to make a crop of peas, but it is a mistake to suppose that any soil is rich enough for them. They will pay as well for good fertilizing as any. But no fresh stable manure should be used on the pea crop, as it induces too rank a growth of vine. From 300 to 600 lbs. of fertilizer with a small percentage of nitrogen and high in potash and phosphoric acid is best for peas. While peas are generally sown for early spring sales it has become quite common and profitable of late years to sow a crop of the

extra early sorts very late for shipping in November. This fall crop often pays better than the spring one.

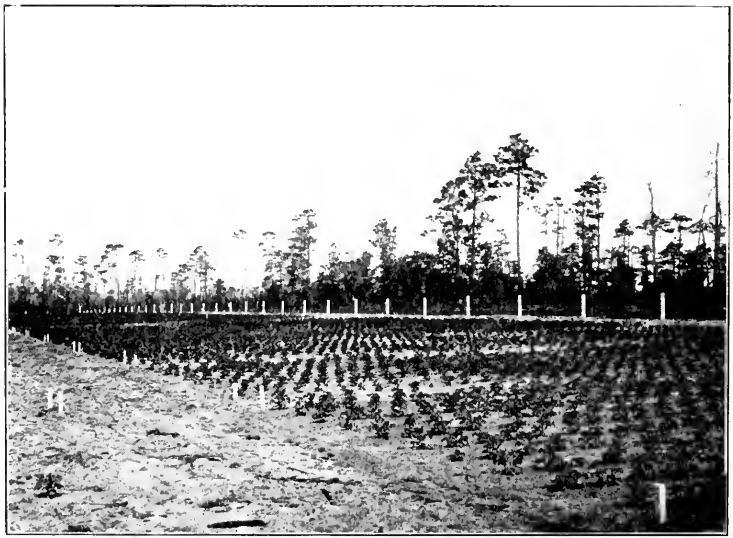
The crop is sown in deep furrows quite thickly, so as to make a broad row, the better to sustain itself, as market gardeners seldom "brush" their pea-vines. Rather deep covering is needed, to better enable the plants to resist the changes of the weather. Four feet apart is about the usual distance between the rows for early peas.

A good early pea for market purposes should be of a strain that makes vines of uniform development, and that ripen their crop all together, so that all can be gathered and shipped at once. Most of the variously named extra early peas are "Daniel O'Rourke," "Nonpareil," "Eclipse," and "Hancock." Use fertilizer suggested for beans.

IRISH POTATOES.

The crop of early potatoes is one in which there is more annual fluctuation in profit than almost any other. Early potatoes as grown in the Southern trucking regions, need more nitrogenous fertilizer than the crop does northward, where it has a longer season of growth. Growing at an early season, when the nitrification in the soil is not so active as later, it is necessary to use a high grade fertilizer in liberal amount. As much as 2,000 pounds are often used by the largest truck farmers.

Planting should be done as soon as the land can be put in good order. It is often done with a machine. Various experiments have been made to ascertain the best mode



VEGETABLE DEPARTMENT, POTATO SERIES.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

of planting potatoes, whether to cut them to single eyes, two or three eyes, or to plant whole potatoes. It has been shown that planting whole potatoes usually gives the largest crop, and single eyes the smallest; but the great quantity of seed potatoes required to be kept or bought to plant them whole will always be a bar to this practice. As a rule the best results, as to profit, have been from cutting the potatoes into pieces containing two or three eyes. These are dropped into furrows two and a half to three feet apart and fifteen inches between the pieces. The fertilizer is spread along the furrows with a machine that scatters it in a broad band in the furrow and on both sides of it. It is then worked into the soil in the furrow before planting. Covering is done by turning a furrow from each side over the planting furrow, so that the potatoes are surrounded by the fertilizer, and a sharp ridge is made over the row.

To bring the best prices, the potato crop should be ready to ship early. They are carefully culled in the field, and only the finest are shipped, unless the price rules high enough to make it pay to ship the culls. They are shipped in barrels and covered with bagging.

SECOND CROP POTATOES.

The practice of growing a second crop of potatoes from seed of the early crop has been practiced for twenty years, but the importance of this crop to the gardener in the South has only been fully realized within the past few years. Experience has demonstrated that these late grown pota-

toes are better for spring planting than Northern potatoes, not only in the South but northward, and the demand for them for planting has increased.

The potatoes from which it is desired to grow the second crop should be allowed to remain where they grew until they become perfectly ripe and the tops have died. Then spread them in any convenient place on the ground and cover them with pine or other straw. Sprinkle the straw, and thereafter never allow it to get dry all through.

Prepare the land as for the early crop, except that the fertilization need not be so heavy, and run out the rows by going twice in a furrow with a turning plow and clean out the furrow full six inches deep. The planting should all be done by the middle of August. This crop will grow green until frost cuts the tops down, and their immaturity prevents their sprouting before planting time. Thus, when the tubers grow, it is with the strong growth of the terminal bud, which gives them a great advantage over the Northern potatoes, that have been long out of the ground and have had the sprouts rubbed off them in the cellar.

LATE POTATOES FOR TABLE USE.

The growing of a late crop of potatoes for table use is a different matter from growing the crop for seed purposes. For the table we want a perfectly matured product. Therefore the planting should be earlier. The seed for this crop are the potatoes of the late seed crop kept over from the previous season. These will keep over in perfect condi-

tion for the planting in July. If kept in a cool, dark cellar they will seldom start their eyes until warm weather sets in. As soon as they show signs of sprouting, remove them at once into full sunlight in a dry place. The sprouts will then form short, stubby and green, and will bear handling without rubbing off. The planting and cultivation should be the same as for the late seed crop. This crop will be fully matured by frost and will keep well for table use. But do not attempt to keep any of these for seed, but select all seed from the regular second crop potatoes.

VARIETIES.

"The Early Rose" is popular with Southern truckers. The strain of these known as the "Houlton Rose" is thought to be more productive than the old strain. "Bliss Triumph" is becoming very popular in many parts. "Rural New Yorker No. 2," while not classed as an early potato, will make tubers of a marketable size as early as any, though the tops are still growing green, and it is a very productive variety. "Early Ohio," a potato similar in general appearance to the Early Rose, but rounder, has been a popular sort in many places, and is as early and more productive than the Early Rose. The "Freeman" is a handsome, smooth potato of recent introduction.

It is difficult to keep the early-grown crop of potatoes in the South. If some of the later-growing sorts, like the Rural New Yorker, Pride of the West, or Bill Nye, are planted at the usual time, they may be kept in very good

condition till about Christmas, but hardly later. The late crop, grown for table use from seed kept over, will keep very well, if the proper conditions are observed. These conditions are absolute darkness and a low temperature.

CHEMICAL FERTILIZER.

The following analysis is suggested:*

Ammonia	6 per cent.
Available phosphoric acid	7 per cent.
Potash	8 per cent.

A mixture of the same analysis may be made from the following materials:*

Nitrate of soda	300 lbs.
Cottonseed meal	600 lbs.
Dissolved bone black	800 lbs.
Muriate of potash	300 lbs.
	2,000 lbs.

or:

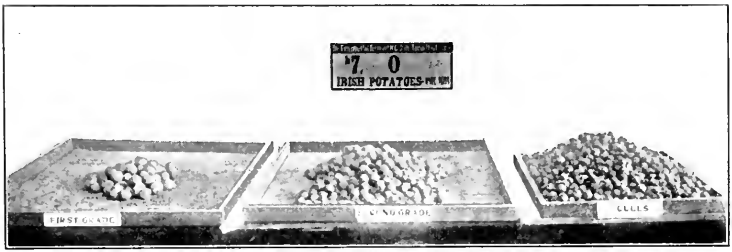
Dried blood	500 lbs.
Bone meal	1,175 lbs.
Sulphate of potash	325 lbs.
	2,000 lbs.

Fine bone meal may be substituted for acid phosphate

TREATMENT FOR DISEASE.

Rot: Spray with Bordeaux mixture early in July, and repeat at intervals of ten days to two weeks until vines mature.

Scab: Soak seed potatoes from ten to thirty minutes in a 2 per cent. solution of corrosive sublimate. Sulphur may also be sown with the seed.



IRISH POTATOES, NO FERTILIZER.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

IRISH POTATOES, FERTILIZED WITH POTASH, PHOSPHORIC ACID, AND NITROGEN.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

Beetle: Apply Paris Green or London Purple as soon as beetles appear. Repeat at intervals of a few days during hatching period.

Early Blight: Without the best of care only partial success may be expected. Spray with Bordeaux mixture as soon as the plants are half grown, and repeat every ten days to two weeks until harvest.

SWEET POTATOES.

The sweet potato crop for the early market is one of the crops that will pay well to use glass in the forwarding of the plants. In order to have good strong plants at the earliest moment for setting in the open ground, it is necessary to protect the plants during their earlier stages. This, of course, can be done in a measure by covering the beds with pine straw, but where one is provided, as every market gardener should be, with frames and sashes, it is far more certain and convenient to grow the plants under the sashes. In bedding the potatoes under glass no manure is needed, as a bed of pure sand is to be preferred. Care must be taken, as the weather grows warmer, to expose the plants at all proper times to the full open air, so as to get them hardened off ready for the transplanting.

The sweet potato is one of the plants with which shallow plowing is far better than deep. Nearly all growers make their hills too high, and thus get long, crooked and unsalable potatoes in the markets, where a short, chunky potato is demanded. To grow these, we must have the land

plowed shallow, and the ridges also shallow. In running out the furrows for making the lists, we scatter in the furrow 300 pounds per acre of a mixture of 100 pounds of dried blood, 600 pounds of acid phosphate and 200 pounds of muriate of potash; make a two-furrow list over this and flatten slightly for planting. Nitrogenous manures should be avoided as tending to an over rank growth of tops.

An ordinary cultivator is the best tool for the greater part of the cultivation. In setting out the plants we draw them carefully from the bed so as not to disturb the tubers, and set them at once in tubs of water. They are set from these tubs dripping with water, and the roots puddle themselves in the soil so that after-watering is seldom needed.

VARIETIES.

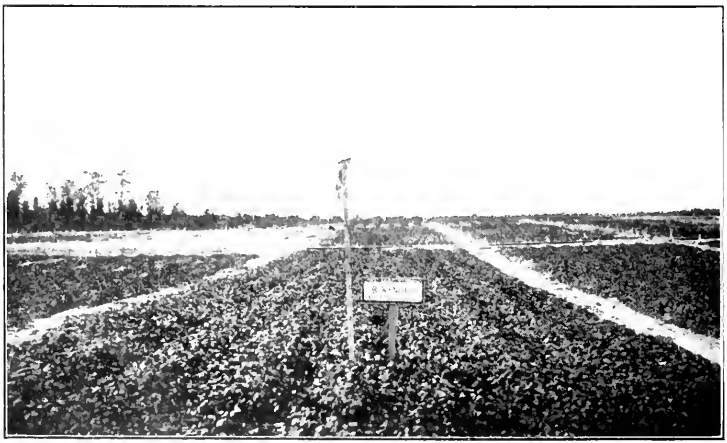
For the early crop the "Yellow Nansemond" is largely used, but we consider the "Virginia Red Nose" far better. This is a plump, yellow potato, with a reddish brown tip when first dug. It is more productive than the Nansemond and of better quality. For the home market and home use the White and Yellow Barbadoes, Norton Yam and Jewell Yam are the best.

CHEMICAL FERTILIZER.

The following analysis is suggested:*

Ammonia	3 per cent.
Available phosphoric acid	7 per cent.
Potash	8 per cent.

SWEET POTATOES, NO FERTILIZER.—EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.



SWEET POTATOES, FERTILIZED WITH POTASH, PHOSPHORIC ACID, AND NITROGEN.—EXPERIMENT FARM SOUTHERN PINES, NORTH CAROLINA.

A nearly equivalent fertilizer may be made by mixing together:*

Nitrate of soda	100 lbs.
Fish scrap	400 lbs.
Acid phosphate	1,180 lbs.
Muriate of potash	320 lbs.
	2,000 lbs.

or:

Tankage (9 per cent.)	175 lbs.
Bone meal	1,500 lbs.
Sulphate of potash	325 lbs.
	2,000 lbs.

RADISHES.

Radishes sometimes pay very well for shipping, but as they are on hand for so short a time, it has been found best to use them as a "catch crop" in the rows of early beets, to mark the rows and be pulled out before they are in the way of the beets. They are tied in bunches and shipped in ventilated barrels. The "Scarlet Turnip Rooted" and the "Long Scarlet Short Top" are the kinds used. The rose-colored "Chinese Winter" radish can also be profitably sown in the fall along with spinach and kale. Use fertilizer suggested for turnips.

SPINACH.

Spinach is a crop very easily grown, and sometimes pays well in the South, particularly when an extra hard winter in the North destroys the crop there. The seed are sown on flattened beds heavily fertilized in the furrow, and is

sometimes protected with a slight ridge on the North side of the row, but usually needs no protection. The sowing is done in early September, and little cultivation is needed, as this first sowing is intended for cutting in December. The main crop, to be cut in late winter and early spring, is sown from the middle of September to the middle of October. Spinach is profitable only on well-enriched land, and not less than 1,000 pounds of high grade fertilizer should be used per acre. The entire plant is cut from the root and shipped in ventilated barrels.

CHEMICAL FERTILIZER.

The following analysis is suggested:*

Ammonia	5 per cent.
Available phosphoric acid	8 per cent.
Potash	6 per cent.

A fertilizer of the same analysis may be made by mixing intimately together:*

Nitrate of soda	200 lbs.
Fish scrap	650 lbs.
Acid phosphate	920 lbs.
Muriate of potash	230 lbs.
	2,000 lbs.

or:

Dried blood	250 lbs.
Bone meal	1,500 lbs.
Muriate of potash	250 lbs.
	2,000 lbs

TOMATOES.

The growing of the early crop of tomatoes can be made most profitable to the gardener who has a good outfit of greenhouse and frames.

The gardener who has the necessary greenhouse may begin the sowing of the seed at least ten weeks before it will be safe to put the plants in open ground. For sowing the seed, we recommend the use of boxes or flats made usually by cutting an ordinary soap box in three flat boxes The boxes, about three inches deep, are filled with the prepared compost recommended in potting cucumbers and melons. The seed are sown thickly in the boxes and placed on the bench of the greenhouse close to the glass, and a night temperature of 60 degrees is maintained. As soon as the plants are well up, and before they have made the second leaves, they are transplanted to other boxes and placed an inch or more apart, and when well established in these boxes the temperature at night is kept a little lower, say 50 to 55 degrees, and the boxes are kept as close as possible to the glass to prevent the plants from being drawn up with weak stems. The house must be well ventilated during the daytime for the same purpose.

In March the plants should be taken from the greenhouse and planted in the cold frames about four inches apart each way. They should then have all the exposure to the outward air possible, only putting the glass over them at night, and in cool, cloudy weather. The object is to get stout, short and well-hardened plants. By April, the glass can be

left off at times. It is always best to get them out as early as practicable, even if they have to be protected from frost afterwards, which is easily done, for we have found that the earlier the plants are in the open ground and live, the earlier the crop.

It is always important to plant tomatoes on land that has not had tomatoes, potatoes or melons on it for several years, as all of these are subject to the same blight. Tomatoes should be shipped as soon as they show signs of turning, for, if allowed to get fully colored they will not arrive in good order. For the earliest, it will pay to wrap in paper, as they can be thus packed more securely. The packing should be in crates with the slats nailed rather close, as wide cracks will often cause the fruit to be badly cut. Culling should be very carefully done and no cracked or damaged fruit allowed in the crate.

VARIETIES.

For general purposes we have found no variety better than the sort called Livingston's Beauty. For the earliest, the Early Ruby will always give the first fruit, but it is not of the finest quality, and as soon as the Beauty comes in it is of very little use. The grower will, of course, test many other varieties for himself, and carefully select his own stock of seeds.

LATE CROP FOR CANNING.

While the canning of tomatoes can never be prosecuted as profitably in the South (owing to climatic difficulties) as

it is in the North, it may at times be desirable to plant a crop for this purpose. For this crop the seed are simply sown outdoors, as soon as the weather will allow and set in the field four by five feet, as for the early crop, and cultivated as the corn is. The way to almost always insure the largest crop is by allowing the vines to take their natural course and trail on the ground. In a small garden it may be best to tie them in order to economize space, but in the field it is entirely unnecessary.

FERTILIZERS FOR THE TOMATO CROP.

It was formerly thought that the tomato did not thrive as well with heavy manuring as most other vegetable crops, but recent experiments have shown that no plant responds more readily to heavy nitrogenous fertilization. It also pays well to use about fifty pounds per acre of nitrate of soda as a top dressing around the plants during the cultivation of the crop. The early crop should always be planted on the warmest sandy land available, and there should be used not less than 1,000 pounds per acre of a well-mixed high grade complete fertilizer. Use the fertilizer suggested for egg plants.

TREATMENT FOR DISEASE.

Rot: Spray with Bordeaux mixture every ten days after fruits are formed. It is a good precaution to keep the plants off the ground by use of a straw mulch.

Leaf Blight: Spray with Ammoniacal copper carbonate as soon as there are any indications of the disease, and repeat the application at intervals of seven to ten days.

TURNIPS.

The only turnip crop of interest to the trucker is the early spring crop. It has been found at times to be a very profitable one, as it is quickly grown and needs no cultivation, as the seed are sown broadcast on land that has been heavily fertilized broadcast. For this crop the lightest and warmest located land should be used, and if it be a piece of newly cleared land, so much the better. The land is well prepared and 1,000 pounds of fertilizer harrowed in; the seed are then sown evenly and thinly, and lightly brushed in with a smoothing harrow. Sow as early as the condition of the soil will admit. The turnips are pulled as soon as they are as large as a teacup, trimmed and shipped in barrels. The best variety is the Extra Early Milan, which grows about as quickly as a radish. It is to be noted with this, as with the late crop of turnips, that a piece of light land heavily fertilized will grow a better crop than old land that has been long in cultivation and is really more fertile.

CHEMICAL FERTILIZER.

The following analysis is suggested:*

Ammonia	5 per cent.
Available phosphoric acid	7 per cent.
Potash	8 per cent.

A fertilizer of the same composition may be made by intimately mixing together:*

Nitrate of soda	250 lbs.
Cottonseed meal	550 lbs.
Acid phosphate	900 lbs.
Muriate of potash	300 lbs.
	2,000 lbs.

or:

Dried blood	300 lbs.
Bone meal	1,350 lbs.
Muriate of potash	350 lbs.
	2,000 lbs.

FERTILIZED WITH PHOSPHORIC ACID AND NITROGEN.

FERTILIZED WITH POTASH, PHOSPHORIC ACID, AND NITROGEN.

SWEET CORN.

EXPERIMENT FARM, SOUTHERN PINES, NORTH CAROLINA.

INSECTICIDES AND FUNGICIDES.

Mention has frequently been made in this book of various materials to be used against plant diseases. While it is generally cheaper to buy these materials of a dealer, they can easily be made on the farm. The following instructions are to be followed strictly in making up these compounds:

Ammoniacal Copper Carbonate.—The stock solution is made up by adding 5 ounces of carbonate of copper to 3 pints of ammonia (26); this may be kept any length of time in a bottle with a glass stopper. For use dilute with 45 gallons of water.

Bordeaux Mixture.—Dissolve 6 pounds of copper sulphate in a wooden or earthen vessel. In another tub or vessel slake 4 pounds of fresh lime; add enough water to reduce it to the consistency of a thick whitewash. Pour this slowly into the vessel containing the copper sulphate solution, using a coarse gunny sack stretched across the top of the vessel for a strainer. Dilute to 45 gallons before applying to plants of any kind.

Kerosene Emulsion.—Soft soap, 1 quart, or hard soap, ¼ pound; 2 quarts hot water; 1 pint kerosene. Stir until thoroughly mixed; then dilute with water, using one part of the emulsion to three or four of water. The most satisfactory way of making an emulsion is to use a force pump for mixing, pumping the mixture back into the receptacle several times.

Another method is to use hard soap, ½ pound; boiling water, 1 gallon; kerosene, 2 gallons. Churn or pump the ingredients thoroughly for fifteen minutes. Dilute ten times when using.

The proper use of Paris Green or London Purple is quite as important as their value as an insecticide. The following directions should be closely observed:

Paris Green.—As a spray, use 1 pound to 200 gallons of water. Keep well stirred so that the poison shall be held in suspension. If this is neglected, the green will settle to the bottom of the vessel, as it is not soluble in water, and the result will be that the spray will contain little poison at first and too much towards the last.

London Purple.—This poison should be used same as Paris Green, 1 pound to 200 gallons of water.

Library
N. C. State College

TABLE 1.

Average Weight of Fertilizing Constituents in 1,000 Pounds of Trucking Crops.

MARKETABLE CROP.	ONE THOUSAND POUNDS CONTAINS:			
	Nitrogen, lbs.	Equiv. to Ammonia, lbs.	Available Phos. Acid, lbs.	Potash, lbs.
Asparagus	2.9	3.52	0.8	2.9
Beets	2.4	2.91	0.9	4.4
Cabbages	3.8	4.61	1.1	4.3
Cauliflower	1.3	1.58	1.6	3.6
Cucumbers	1.6	1.94	1.2	2.4
Lettuce	2.3	2.79	0.7	3.7
Onions	1.4	1.70	0.4	1.0
Potatoes, Irish	2.1	2.55	0.7	2.9
Tomatoes	1.6	1.94	0.5	2.7
Turnips	1.8	2.19	1.0	3.9
Compare with—				
Wheat (grain)	23.6	28.7	8.90	6.10
Corn (grain)	18.2	22.1	7.00	4.00

TABLE 2.

Average Yield of Trucking Crops, and the Weight of the Fertilizing Constituents contained in them which is annually removed from the soil.

CROP.	MARKETABLE PRODUCT.	Total Weight, lbs.	CONTAINING: Nitrogen, lbs.	Or Ammonia lbs.	Phos. Acid, lbs.	Potash lbs.
Asparagus	.....	4,000	11.6	14.08	3.2	11.6
Beans, Lima	30 bushels, dry, at 60 lbs.	1,800	....	....	..	....
Beans, Snap	150 crates at 40 lbs	6,000	....	....	...	....
Beets (Early)	100 barrels at 180 lbs	18,000	43.2	52.38	16.2	79.2
Cabbage (Early)	200 barrels at 150 lbs	30,000	114.0	138.30	33.0	129.0
Cauliflower	1,000 heads at 4 lbs	4,000	5.2	6.32	6.4	14.4
Celery	3,000 heads at 2 lbs	6,000	....	....	...	....
Cucumbers	1,000 bushels at 70 lbs	70,000	112.0	135.80	84.0	168.0
Egg Plant	130 barrels at 200 lbs	26,000	....	....	...	....
Lettuce	40,000 heads at ¾ lb.	30,000	69.0	83.70	21.0	111.0
Melons, Musk	5,000 at 2 lbs	10,000	....	...	...	....
Onions	800 bushels at 60 lbs	48,000	67.2	81.60	19.2	48.0
Peas, Green	175 1-bushel crates at 50 lbs.	8,750	....	....	...	....
Potatoes, Irish	80 barrels at 175 lbs	14,000	29.4	35.70	9.8	40.6
Potatoes, Sweet	300 bushels at 60 lbs	18,000	....	...	...	....
Spinach	100 barrels at 60 lbs.	6,000	....	...	...	....
Tomatoes	100 bushels at 70 lbs	7,000	11.2	13.58	3.5	18.9
Turnips	500 bushels at 65 lbs	32,500	58.5	71.18	32.5	126.8
Compare with—						
Wheat (grain)	15 bushels at 60 lbs	900	21.2	25.83	8.01	5.5
Corn (grain)	20 bushels at 56 lbs	1,120	20.4	24.75	7.8	4.5

TABLE 3.

Average Percentage Composition of Fertilizing Ingredients.

INGREDIENTS.	CONTAINING: Nitrogen.	or Ammonia	Phosphoric Acid	Potash.
FURNISHING NITROGEN PRINCIPALLY:				
Sulphate of Ammonia, 98 per cent.	20.	24.	....	....
Nitrate of Soda, 97 per cent	16.	19	....	....
Dried Blood	13.	16.	5.	....
Fish Scrap	8.2	10.	8.†	....
Tankage	7.4	9.	11.†	....
Cyanamid	16.	19.	....	....
Cotton Seed Meal	7.	8.50	2.5*	1.8
FURNISHING POTASH PRINCIPALLY:				
Kainit	....	....	....	12.
Hardsalz	....	....	....	16.
Sulphate of Potash	....	....	....	48.
Sulphate of Potash, Magnesia	....	...	....	....
(Double Manure Salt)	....	....	....	25.
Muriate of Potash	....	....	....	50.
Wood Ashes (Hard Wood, Unleached)	.. .	....	2.	5.
Cotton Seed Hull Ashes	....	....	9.	23.
Tobacco Stems	1.5	1.80	.75	5.
FURNISHING PHOSPHORIC ACID PRINCIPALLY:				
Acid Phoshpate	...	....	10–14*	....
Dissolved Bone	....	2	14.*	....
Bone Meal	....	4.	23.‡	....
Bone Black	....	....	28.	...
Bone Ash	....	....	35.	....
Dissolved Bone Black	....	...	16.*	....

*Available Phosphoric Acid.
†Contains 4 per cent. Available Phosphoric Acid.
‡Contains about 10 per cent. Available Phosphoric Acid.

TABLE 4.

Average Percentages of Constituents for Fertilizers for Trucking Crops.

CROP.	CONTAINING:			
	Nitrogen.	Ammonia.	Available Phos. Acid.	Potash.
Asparagus	4.12	5	6	8
Beans, Lima	2.47	3	7	7
Beans, Snap	2.47	3	7	7
Beets	4.94	6	5	8
Cabbages	4.94	6	5	7
Cauliflower	4.94	6	5	7
Celery	5.77	7	5	8
Cucumber	4.94	6	5	7
Egg Plant	4.12	5	6	7
Lettuce	4.94	6	5	8
Melons, Musk	4.94	6	5	7
Melons, Water	4.94	6	5	7
Onions	4.12	5	5	8
Peas	2 47	3	7	7
Potatoes, Irish	4.94	6	7	8
Potatoes, Sweet	2.47	3	7	8
Radishes	4.12	5	7	8
Spinach	4.12	5	8	6
Tomatoes	4.12	5	6	7
Turnips	4.12	5	7	8